

**IN THE UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION**

WAPP TECH LIMITED PARTNERSHIP
AND WAPP TECH CORP.,

Plaintiffs,

v.

SEATTLE SPINCO, INC., ET AL.,

Defendants.

Case No. 4:18-cv-00469-ALM

JURY TRIAL DEMANDED

**DECLARATION OF DR. MATTHEW B. SHOEMAKE IN SUPPORT OF
DEFENDANTS' MOTION TO EXCLUDE SUPPLEMENTAL APPORTIONMENT
OPINIONS FROM PLAINTIFFS' TECHNICAL EXPERT, DR. SAM MALEK**

CONTAINS CONFIDENTIAL INFORMATION SUBJECT TO PROTECTIVE ORDER

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I. INTRODUCTION

1. I have reviewed the Supplemental Expert Report of Plaintiff's expert, Dr. Sam Malek, dated February 11, 2021 ("Malek Supplemental Report"). I have also analyzed the Court's February 4, 2021 Memorandum Opinion and Order in which the Court noted deficiencies in Dr. Malek's opening report on infringement ("Infringement Report"). Dr. Malek continues to disclose new and flawed theories of apportionment. In § II of this declaration, I highlight certain new positions that Dr. Malek has disclosed. The fact that network virtualization technology predates the Asserted Patents is covered in § III. The fact that prior art versions of LoadRunner contained network virtualization technology is covered in § IV. In § V I discuss the fact that prior art versions of LoadRunner supported the testing of mobile applications according to Dr. Malek's infringement theories. Finally, § VI covers the fact that Dr. Malek's apportionment theory fails to account for alleged resource graphs that are in prior art versions of LoadRunner.

2. In this declaration I use the terms network virtualization, network emulation and network simulation interchangeably and draw no distinction between them. Whether called virtualization, emulation or simulation, the ability to artificially cause network impairments such as latency/delay, throughput/bandwidth limitations, and packet errors is unquestionably technology that is in the prior art, as I explain below.

II. STATEMENTS OF DR. SAM MALEK

3. Dr. Malek asserts that there are no non-infringing alternatives for testing mobile applications using a virtualized network environment:

As I have set forth in my Infringement report, there are no commercially acceptable non-infringing alternatives to the '192, '678 and '864 patents for *testing mobile applications using a virtualized network environment*.

Malek Supplemental Report at ¶ 11 (emphasis added). This necessarily means that no prior art techniques were available for testing mobile applications in a virtualized network environment (not true), otherwise, such prior art techniques would be non-infringing alternatives. *Cf.* § IV below discussing prior art LoadRunner 7.8’s ability to test mobile applications with network virtualization.

4. In Dr. Malek’s Supplemental Report, he asserts the “patented function” is testing mobile applications with network virtualization.

I sought to determine the relative value of *testing mobile applications using a virtualized network environment* (the patented function) to non-patented functions (*i.e.*, non- virtualized network testing and non-mobile testing).

Malek Supplemental Report at ¶ 14 (emphasis added). Such an assertion is not true, as evidenced by prior art versions of LoadRunner, which I discuss below. Dr. Malek’s failure to apportion out the value of prior art testing of mobile applications in a virtualized network environment leads to serious error in his apportionment result.

5. Dr. Malek also asserts the entire value proposition of the Accused Products is virtualized network testing:

- “... The Entire Value Proposition of the Accused Products is Virtualized Network Testing.” Id. ¶ 14 (underline in original).
- “MF’s own documents confirm that the ability to test in a virtualized network environment is of paramount importance and really the *entire value proposition* of the Accused Products.” Id. ¶ 17 (emphasis in original).
- “Again, MF is on record as saying its ... *entire ‘value proposition’* is virtualized testing.” Id. ¶ 24 (emphasis added)
- “Micro Focus itself clearly identifies *virtualized network testing* as having nearly all of the value (if not the entire value).” Id. ¶ 25 (emphasis added).

6. Dr. Malek generally couches such assertions with reference to Micro Focus's statements and marketing. In at least one place, however, Dr. Malek confirms that he agrees that the entire value proposition of the Accused Products is in virtualized network testing. Dr. Malek explains that without virtual testing, there is no need and no value for a product that only performs non-virtualized network testing, and thus all of the value is in testing in virtualized network environments:

I agree, if you removed the ability to virtually test from the Accused Products there is essentially no need for the Accused Products. Theoretically applications could be tested under certain conditions on a non-virtual network environment. But there is nothing special, valuable or distinct about the Accused Products' ability to test applications in a non-virtualized networked environment that would generate value. This is why essentially all of the value of the Accused Products lies in the ability to virtually test software applications.

Id. ¶ 24 (“all” emphasized in original, all other emphasis added).

7. Dr. Malek then transitions to explaining that “the underlying economic rationale for an apportionment of at least 80%” is based on (a) Micro Focus placing “essentially ***all of the value on virtualized testing***”; (b) Micro Focus “focuses almost ***entirely on virtualized testing*** over non-virtualized testing in marketing”; and (c) “***virtualized testing*** is core to and ***used to market at least 80% of the key features in each of the Accused Products.***” Id. ¶ 26 (emphasis added).

8. There are two significant problems with this analysis as I discuss below.

9. ***First***, if virtualized network testing accounts for the entire value proposition of the Accused Products, it is critical to determine if such network virtualization technology is in non-patented, prior art technology or is patented technology. In the sections below, I show that it is unquestionable that network virtualization technology existed in the prior art (§ III), prior art LoadRunner products had network virtualization (§ IV), and prior art LoadRunner products also allowed testing of mobile applications, under Dr. Malek's infringement theory (§ V). Despite

these facts, Dr. Malek makes no attempt to apportion out non-patented network virtualization technology nor does he attempt to apportion out non-patented network virtualization technology used with testing of mobile applications.

10. **Second**, Dr. Malek’s supplemental report makes additional errors. When providing alleged justification for his 80% apportionment factor, Dr. Malek’s analysis is the opposite of apportionment. He looks for any features that are marketed as being related to network virtualization technology, and if that is the case, he apportions the entire value of the feature to the Asserted Patents. In my view, this is exactly the opposite of apportionment. Indeed, it is a problem that apportionment is designed to address: the capture of value from features and technology that are not attributable to the patented invention. This error can be seen in Dr. Malek’s statement that “virtualized testing ... [is] used to market at least 80% of the key features in each of the Accused Products.” Id. ¶ 26. Dr. Malek’s analysis of nine “key features” seems focused on determining if there is a “*relationship* (if any) to network virtualization.” Id. ¶ 27.

11. Below, I provide a list of the nine “key features” that Dr. Malek uses to reach the 8/9 fraction which he uses as justification for his 80% apportionment factor with regard to LoadRunner Professional, directly, and with regard to LoadRunner Enterprise and LoadRunner Cloud, derivatively. See id. ¶¶ 28–55. As will be seen, Dr. Malek errs by simply looking for some relationship between network virtualization and the feature and then assigning the full value of that feature (1/9 for each) to the Asserted Patents, which in my opinion is the opposite of apportionment:

- **“Test Against a Broad Range of Applications and Protocols”** – On its face, this feature is about a broad range of scripting protocols which is not a topic of the asserted patents. Despite scripting protocols for virtual users in the context of load testing servers (not mobile devices) not being discussed in the Asserted Patents, Dr. Malek says, “*All of these applications and protocols rely on some type of a network and LoadRunner Pro uses network virtualization to properly test them under various*

network conditions.” This is wrong on its face, because Dr. Malek is apportioning the full value of this feature to the Asserted Claims based on “applications and protocols” (which are not taught in the Asserted patents) “rely[ing]” on “network virtualization,” a feature that is off by default (as admitted by Dr. Malek) in the Accused Products, thus clearly not required for using “some type of network” much less the “broad range of applications and protocols.” Dr. Malek fails to apportion for network virtualization being off, the non-patented value of the applications and protocols themselves, for non-patented network virtualization technology, and instead assigns a full 100% of this feature to the Asserted Patents.

- **“Record and Replay a Variety of Web 2.0 Technologies”** – Here Dr. Malek focuses on “TruClient Technology” which is only one of many scripting technologies in the Accused Products. He performs no apportionment for other scripting technologies. He quotes a data sheet as saying, “gives you the ability to various levels of user activity, from the GUI level down to the transport and socket level” [sic]. Dr. Malek then links “transport and socket level” as phrases associated with networks. He then uses the association with networks to tie to network virtualization. He then concludes that “network virtualization is a core enabler of this feature” and therefore assigns 100% of the value of this feature to the Asserted Patents. I find this approaching of finding some link to network virtualization to be flawed methodology and to be the antithesis of proper apportionment analysis.
- **“Scale Up Tests Leveraging the Public Cloud”** – Dr. Malek’s here leverages the statement, “‘test the application before it goes live, so you can deploy with confidence’ using the cloud.” According to the Abstract of the ‘192 patent, the patents in suit are about emulating the execution of mobile device applications where the mobile device “is emulated ... using ... a processor extrinsic to the mobile device.” The primary purpose of the Accused Product is not testing applications for mobile devices at all, rather LoadRunner is designed to generate virtual users (called Vusers) that put load on a server in the cloud, not on a mobile device. LoadRunner is able to “scale up” by generating thousands to millions of Vusers to put load on cloud or web servers, not mobile devices. Nonetheless, Dr. Malek links LoadRunner’s ability to “scale up” by generating virtual users to the Asserted Patents. First, he asserts “network virtualization is key to this feature.” He argues this is true because “Cloud computing refers to a form of computing which *resources on a server* are made available to clients through the Internet.” So, he has taken “cloud” and linked it to “network” saying cloud computing is “network *reliant*” (emphasis added). Dr. Malek quotes a datasheet as saying, “you can add multiple cloud accounts and manage network profiles for your various LGs.” LG stands for *load generator*. A load generator creates multiple virtual users to put load on a server, i.e. it has nothing to do with testing whether an application for a mobile phone exhausts the resource of a

mobile device. Dr. Malek then apportions the entire value of load generators, *load* generators that existed in prior art versions of *LoadRunner* as a key initial feature, to the Asserted Patents which he further rationalizes by saying the “ability to scale up tests ... requires the ability to emulate various networks.” Even if this statement were true (it is not), it does not relieve Dr. Malek from apportioning out the value of technology that is clearly in the prior art such as scaling up load using load generators.

- **“Deliver Enterprise Load Generation, Monitoring, and Diagnostics”** – Dr. Malek again here fails to apportion the value of load generation from the value of network virtualization. He makes a conclusory statement, “Without network virtualization, the generated load would be unrealistic,” to link network virtualization to load generation and thereby claim the entirety of the value of this feature for the Asserted Patents. This is a flawed methodology that leads to serious error.
- **“Mobile Application Testing”** – Here Dr. Malek relies on a non sequitur. He quotes language that indicates “integration with Network Virtualization.” He then assumes that integration indicates network virtualization is “core” to the feature of “mobile application testing.” Integration does not imply whether something is a core feature or not, thus Dr. Malek’s analysis is logically flawed. Further, the Asserted Patents are about testing applications running on a mobile device. Dr. Malek does not perform any type of apportionment analysis to determine if the “mobile application testing” described here is actually software running on a server in the cloud in support of mobile devices, as opposed to on the mobile devices themselves. Such software running on a server in the cloud is not an application for a mobile device of the Asserted Patents, and any value thereof would need to be apportioned from the value of the Asserted Claims. Dr. Malek performs no such analysis. Dr. Malek assumes then equates “platform” in a to different types of cellular networks, which gives him linkage to a network. Despite network virtualization being an optional feature in *LoadRunner*, he then declares “*LoadRunner Pro* uses network virtualization to create network conditions on those platforms.” Based on the non-sequitur and linkages based on the word “platform,” Dr. Malek then assigns 100% of the value of this feature to the Asserted Patents, without apportioning out any value of prior art network virtualization technology, software applications that run on a server instead of a mobile phone, or apportioning for situations where network virtualization is not even enabled.
- **“Mobile Application Recording Options”** – This feature has to do with recording, something not taught in the Asserted Patents. Dr. Malek fails to apportion for the “mobile application” being discussed having to do with software that runs on a server rather than a mobile device. Dr. Malek makes a conclusory statement declaring,

“Network virtualization is a key feature” to recording options. Dr. Malek links the description of “mobile application recording options” that uses the word “deployment” to “LoadRunner Pro” by saying, “LoadRunner Pro is used to emulate network conditions in a given *deployment* of software.” Through this flawed logic, Dr. Malek links an optional feature for recording of network traffic to network virtualization and then assigns the whole of the value of this feature to the Asserted Patents. This is flawed apportionment analysis. Further, Dr. Malek fails to address (a) the fact that the recording feature is an option; and (b) the fact that network recording to PCAP files was known prior art technology. See, e.g., <https://github.com/the-tcpdump-group/libpcap/tree/libpcap-0.6>.

- **“Network Virtualization Support”** – Here Dr. Malek assigns the whole of network virtualization technology to the Asserted Patents and performs no apportionment to remove value of non-patented network virtualization technologies including those in prior art versions of LoadRunner. Cf. §§ III-V below.

12. Dr. Malek thus arrives at his $8/9 = 88\%$ apportionment factor which he says is consistent with the 80% value that he asserted in his Infringement Report. See Malek Supplemental Report ¶ 37. In summary with respect to my second point, Dr. Malek’s attempt to provide a basis for his 80% apportionment factor is fundamentally flawed, based on a flawed methodology and is grossly in error.

III. NETWORK VIRTUALIZATION TECHNOLOGY PREDATES THE ASSERTED PATENTS

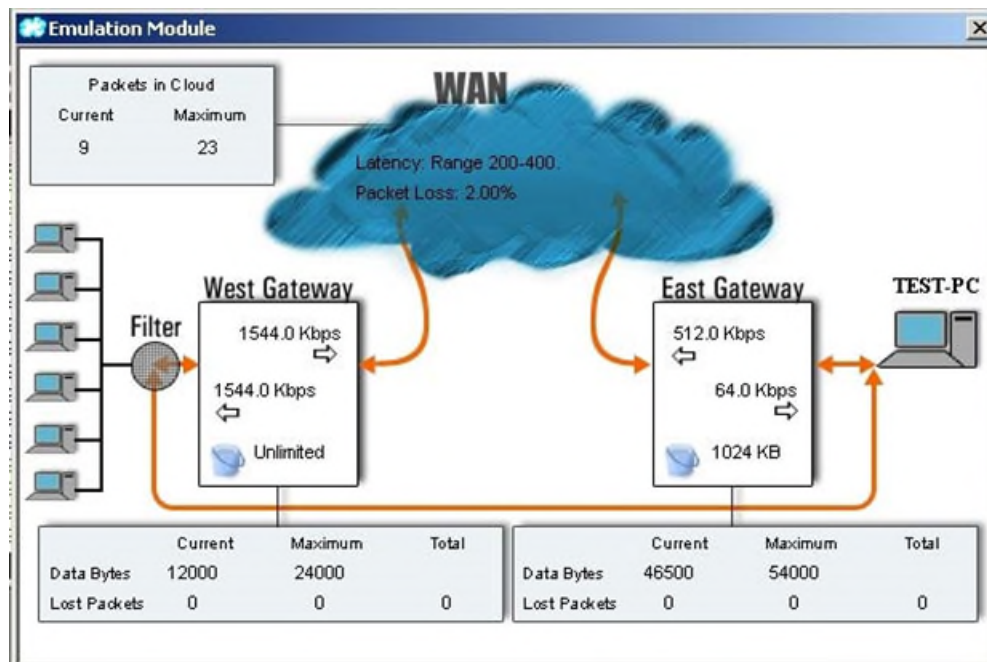
13. As I explained in §V.D of my December 22, 2020 rebuttal expert report on non-infringement, network virtualization technology unquestionably predates the Asserted Patents. An early example of network virtualization is DummyNet which was integrated into the FreeBSD operating system in 1994. Additionally, prior art mobile device software development platforms from Apple and Android contain network virtualization capabilities. See also <https://en.wikipedia.org/wiki/FreeBSD> (showing “Dummynet traffic shaping” added in “22 November 1994”). FreeBSD software has been used in many commercial products the most notable of which may be Apple’s use of it for Mac OS. See https://en.wikipedia.org/wiki/List_of_products_based_on_FreeBSD.

14. More closely related to the Accused Products in this case, Shunra Software Ltd. (“Shunra”) was a company that developed network virtualization technologies. See https://web.archive.org/web/20040603034347/http://www.shunra.com/products/cloud/cloud_1.php from June 3, 2004. Indeed Shunra is the original creator of the accused Network Virtualization product, which Shunra originally marketed as WAN Emulation. Shunra products such as Shunra Cloud enabled developers to emulate network conditions:

Designed for flexibility and ease-of use, Shunra\Cloud recreates a single network link on a computer in the lab. This enables users to *test the performance of IP-based technologies under a variety of conditions such as latency, packet loss, jitter, bandwidth constraints and more*. With Shunra\Cloud tests are fully customizable, repeatable, and can be automated enabling users to determine the real end-user experience without the complexity or risk of testing over the production network.

Id. (emphasis added).

15. A diagram taken from the same shows prior art capabilities of Shunra products to created virtualized network testing environments that allow injection of network impairments such as “Latency” and “Packet Loss.”



Id.

16. Despite the fact that network virtualization technologies were clearly in the prior art, Dr. Malek does not apportion out the value of non-patented network virtualization technologies. This failure causes Dr. Malek's technical apportionment to be grossly in error.

IV. PRIOR ART VERSIONS OF LOADRUNNER INCLUDED NETWORK VIRTUALIZATION

17. LoadRunner 7.6 and LoadRunner 7.8—along with Shunra WAN Emulation, which was later rebranded Network Virtualization—are prior art to the Asserted Patents.

18. Certain versions of LoadRunner product were available before June 10, 2005. Specifically, LoadRunner Version 7.6 and 7.8 were available at least by 2003. I have confirmed this date in several ways, including by reviewing copyright dates and associated metadata for product guides for both versions. As those guides and other sources also confirm, as of 2003, the LoadRunner product was a product of Mercury Interactive Corporation.

19. A 2002 press release indicates that Mercury Interactive, the maker of LoadRunner at the time, and Shunra Software, the maker of what was later renamed and is now accused as Network Virtualization in this case, announced the companies' products would be integrated:

Shunra Software has announced that it is teaming with Mercury Interactive (NASDAQ:MERC) to integrate its Wide Area Network (WAN) emulation technology with Mercury Interactive's industry leading load test software.

<https://www.thefreelibrary.com/Shunra%2Band%2BMercury%2BInteractive%2Bteam%2Bto%2Bforecast%2Band%2Boptimize...-a092826257>

20. The same article states that as a result of the partnership, Mercury Interactive's load testing software will add WAN emulation capabilities:

Additionally, Mercury Interactive will provide WAN emulation capabilities in the load testing software.

Id.

21. The same article states that Shunra's network emulation technology will be integrated with LoadRunner. Further, the combined product is stated to determine the actual network performance and to graph baseline performance information:

Shunra\Forecaster *integrates Shunra's award-winning WAN emulation product, Shunra\Storm, with Mercury Interactive's powerful load testing software, LoadRunner* and Astra LoadTest, enabling IT professionals to *emulate the real network topology and conditions* that cannot be brought into the lab, and the *multitude of end-users accessing the application* from various locations worldwide. The *combined emulation of the network and user load* allows Shunra\Forecaster to determine the *actual network performance* and its impact on end-user response times, *graph baseline performance information*, and evaluate SLAs.

Id. (emphasis added).

A. LoadRunner 7.6

22. In this section, I show that LoadRunner 7.6 is prior art and contains network virtualization technology.

1. Public forum posts (Exh. A)

23. By early 2003, a public website forum named Software Test and Quality Assurance Forums (www.sqaforums.com) had public posts from January 28, 2003 to March 5, 2003 indicating that Shunra's network emulation technology had been integrated into Mercury Interactive's LoadRunner product.

<http://www.sqaforums.com/showflat.php?Cat=0&Number=111093&page=&fpart=&vc=1&X-ANT-WAF-Attempt=1>. I attach a copy for convenient reference as exhibit A hereto.

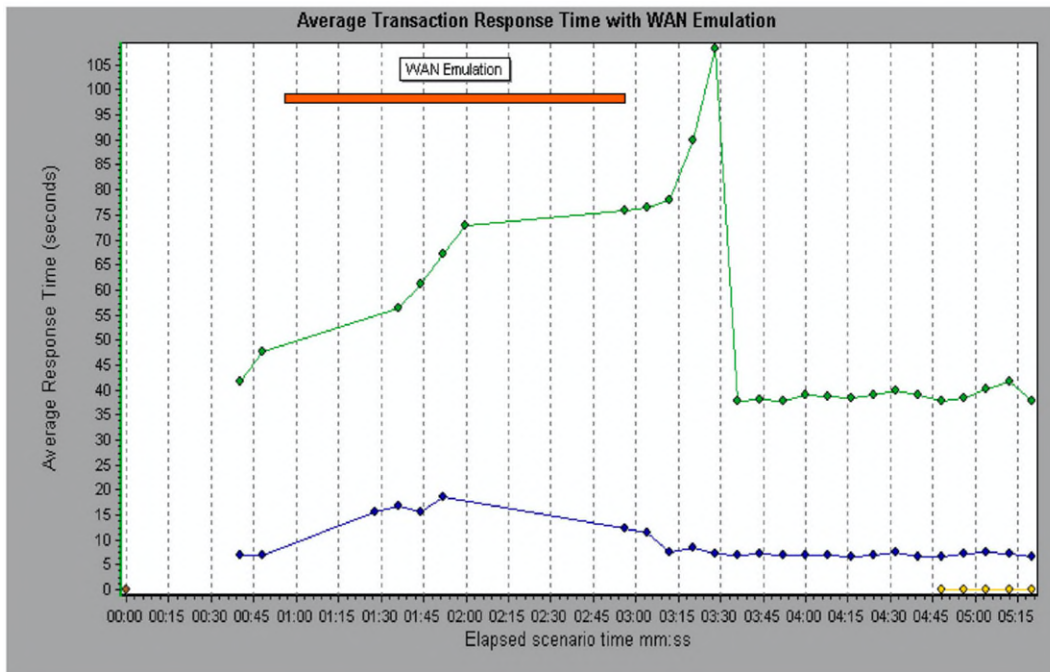
24. The public forum posts confirm that Shunra's network emulation technology was added to LoadRunner at version 7.6, and that integration allowed virtualized network testing to be performed in LoadRunner. They also confirm that due to the integration, network profiles existed and could be accessed, bandwidth limits and latency and network errors could be

simulated and tested, and reports (including of response times) were available, all from within LoadRunner, as of version 7.6.

2. Analysis User's Guide (Exh. B)

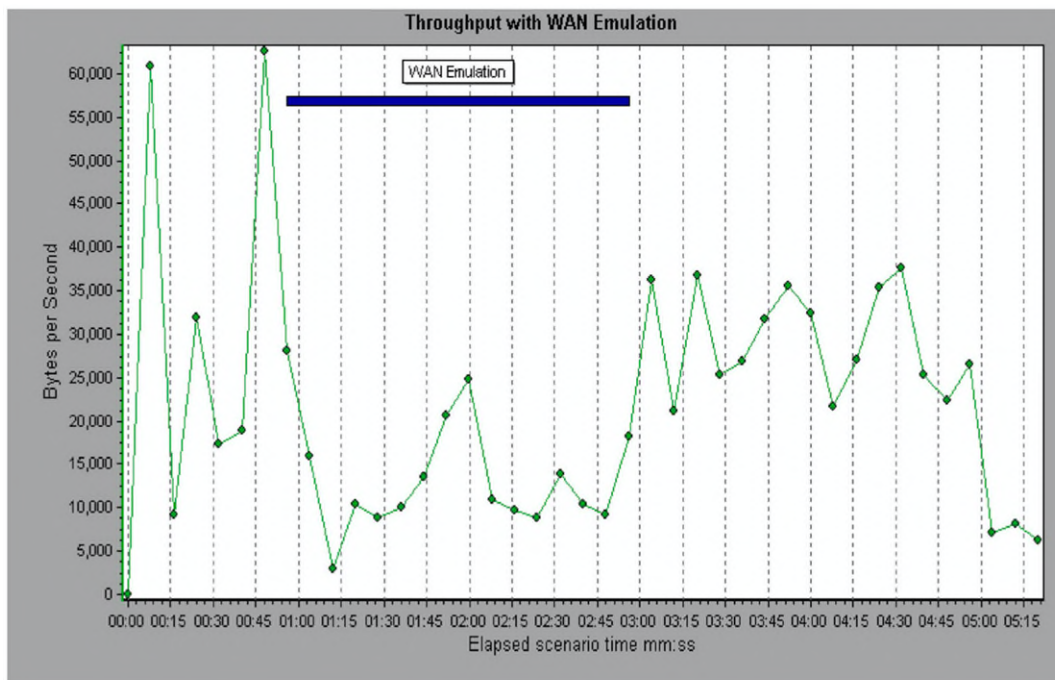
25. I now turn to the LoadRunner Analysis User's Guide Version 7.6 from Mercury Interactive. See MFDEFS00284840-285208. Excerpts are attached in exhibit B hereto. This document confirms that features whose value Dr. Malek apportions to the Asserted Patents were already available in LoadRunner 7.6.

26. LoadRunner 7.6 includes network emulation. This network emulation includes effects such as latency, packet loss, link faults and dynamic routing. The Analysis tool even allows the time period that the network emulator was active to be displayed as part of the analysis graphs. Id at pp. 54-55 (non-bates page-number references are to internal pagination). The graph shows that network emulation can be used with LoadRunner testing:



Id.

27. Another example shows bandwidth measurements (“Bytes per second”) being displayed as a graph of the results of running a test scenario. The specific period during which network emulation is enabled is indicated on the graph. Id. at p. 56. Note again Dr. Malek accuses bandwidth as being a resource of the mobile device.



Id.

3. “Read Me First” (Exh. C)

28. I now turn to the document “Read Me First LoadRunner 7.6 WAN Emulator Add-n.” See MFDEFS00285995-997. This is reproduced as exhibit C. This document confirms that the network virtualization technology was integrated with LoadRunner 7.6 and came from Shunra:

Read Me First

LoadRunner 7.6

WAN Emulator Add-in

This file provides information about the Shunra WAN Emulator Add-in for LoadRunner Controller version 7.6:

- Add-In Description
- System Requirements and Limitations
- Add-In Installation

MFDEFS00285995 (yellow highlighting added).

29. This add-in enables virtualized network testing:

Add-In Description

The Shunra WAN Emulator Add-in for LoadRunner Controller version 7.6 installs a WAN emulator that enables you to emulate the behavior of a wide variety of network infrastructures during a load testing scenario.

Id. (yellow highlighting added).

30. The network emulation capability allows phenomena like packet loss, latency, congestion, bits errors, packet ordering, fragmentation and link disconnections to be emulated:

Shunra WAN Emulator

The Shunra WAN Emulator introduces basic WAN effects over your LAN, so that you can characterize many aspects of the WAN cloud and efficiently control your emulation in a single network environment. The Shunra WAN Emulator allows you to emulate highly probable phenomena like packet loss, latency, congestion, bit errors, packet reordering, fragmentation, and link disconnections.

Id. (yellow highlighting added).

31. In summary, LoadRunner 7.6 enables (a) the generation of test scripts using VuGen; (b) has a Controller for running test scenarios that can use one (or more) virtual users

(Vusers) running a script from VuGen; (c) contains an Analysis program for analyzing the results of a test run; (d) *contains virtualized network emulation*; and (e) can generate resulting graphs that show the throughput to the virtual client. Thus, LoadRunner 7.6 contains the features that Dr. Malek uses to demonstrate alleged infringement along with network virtualization, a fact Dr. Malek's apportionment analysis does not account for.

B. LoadRunner 7.8

32. In this section, I show that LoadRunner 7.8 is also prior art and contains network virtualization technology.

1. "Read Me First" (Exh. D)

33. The document titled "LoadRunner 7.8 Read Me First" is available at MFDEFS00285954–73. It is reproduced as exhibit D. This document has a copyright in 2003, which corresponds to the release of LoadRunner 7.8. See MFDEFS00285973.

34. The document reaffirms that WAN emulation was added in LoadRunner 7.6. It indicates WAN emulation allows emulation of networks. The testing can happen during a load test. Note that Dr. Malek relies on a Vuser running a script during the load test to satisfy claim limitations related to a mobile device and emulation of mobile applications. The text below also indicates the user can select certain types of network impairments to be used during the network emulation:

WAN emulation enables you to *emulate* the behavior of a wide variety of *network infrastructures during a load testing scenario*. *Set parameters* that characterize WAN effects *such as latency, packet loss, dynamic routing effects, and link faults*, and *monitor the effects* of your emulation settings on the network performance.

MFDEFS00285955 (emphasis added).

35. Further support for the inclusion of WAN Emulation in the LoadRunner Controller is shown under “Controller Requirements.” MFDEFS00285956 (“WAN Emulation requires a ... network interface card”).

36. Support for “WAN Emulation” is also evidenced under the “Controller” section at MFDEFS00285955 (“WAN Emulation...,” “The WAN Emulation driver...,” “To reset the WAN Emulator driver...” and “where WLAN emulation resides”).

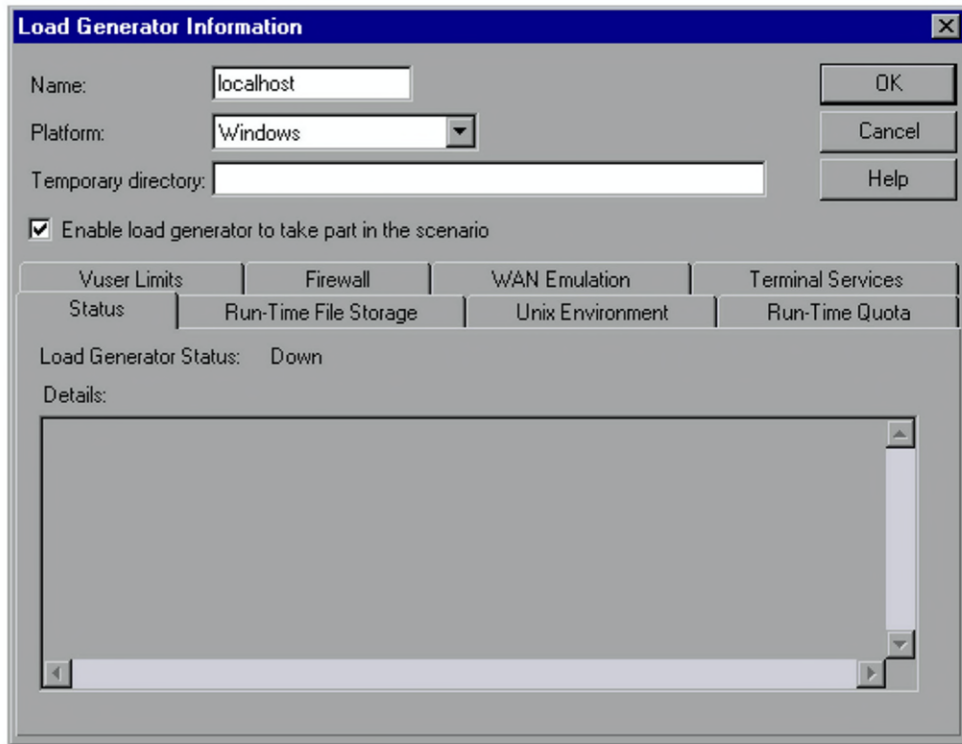
2. Controller User’s Guide (Exh. E)

37. The LoadRunner Controller’s User’s Guide Version 7.8 is a document that describes the operation the Controller program that is used to execute load tests in LoadRunner 7.8. See MFDEFS00285210. It is excerpted in exhibit E hereto. The copyright on the guide is 2003. Id. at copyright page.

38. The Controller 7.8 allows for execution of load tests based on Vuser scripts. A scenario is defined that uses one or more scripts. Id. at p. xi (“To generate load, LoadRunner runs thousands of Virtual Users....”); see also id. at p. 4 (“LoadRunner ... replace[s] human users with virtual users or Vusers.”).

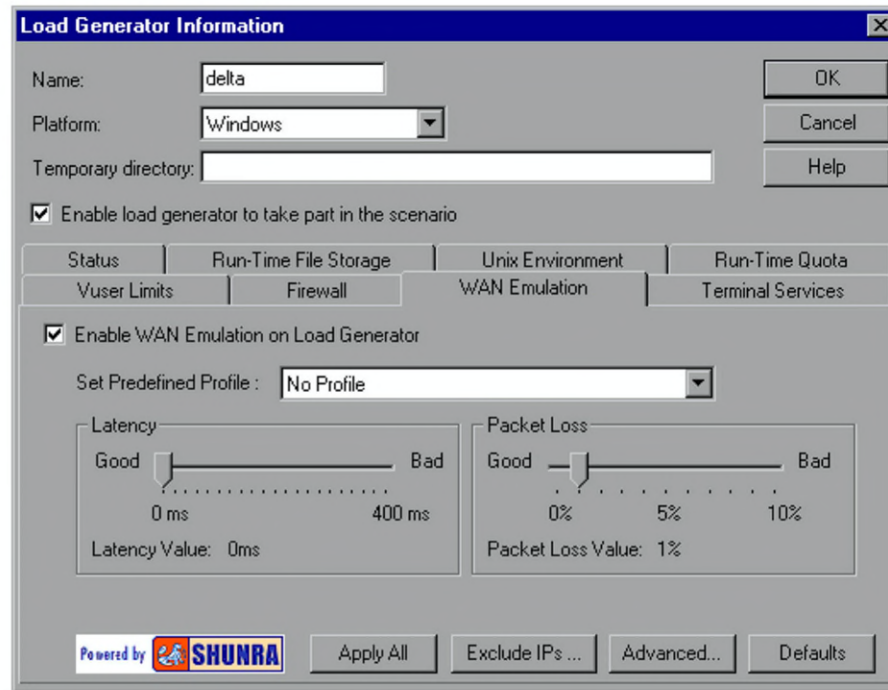
39. Chapter 5 discusses the design of scenarios. Id. at p. 49. This includes the use of network virtualization technology named “WAN Emulation.” Id. Chapter 5 discusses details of selecting a script to run, setting the number of Vusers to run (e.g. one for a single-user baseline test).

40. The configuration of WAN Emulation is described as part of “Configuring Load Generator Settings.” Id. at p. 77. This includes WAN Emulation. Id. It can be seen that WAN Emulation is one of the tabs under “Load Generator Information”:



Id. at p. 79.

41. The “Configuring of WAN Emulation Settings” is discussed at pp. 95-101. For example, as page 95 there is a screen with a tab that is where WAN Emulation settings are selected:



42. Clicking “Enable WAN Emulation on Load Generator” causes WAN Emulation to be enabled.

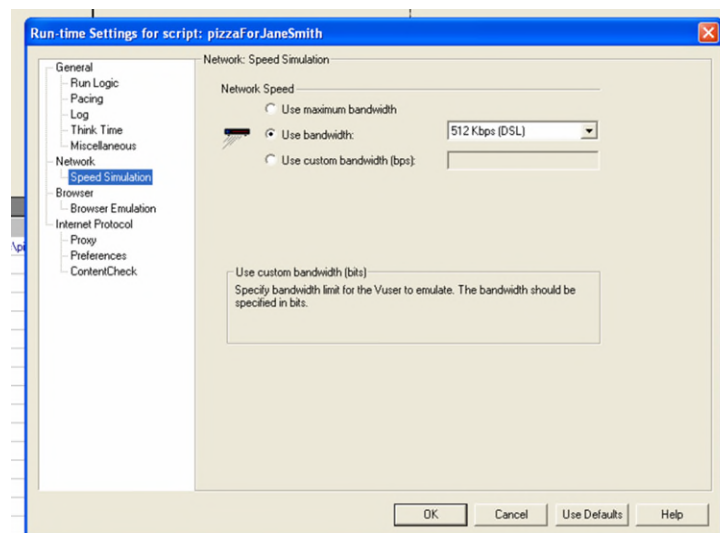
43. There are predefined profiles that can be selected from the “Set Predefined Profiles” pulldown menu. A number of predefined profiles are included. Id. at pp. 96-97. This includes a “Metropolitan Area Network link” that emulates networks in a metropolitan area. Cellular networks are such networks.

44. Whether set manually or via predefined profile, there are a number of impairments such as latency, packet loss, packet ordering, bit errors, duplication, link disconnect and fragmentation that the WAN Emulator can apply. Id. at pp. 97-99.

45. Moreover, WAN Emulation can be stopped and restarted anytime during a scenario run to see the impact of the WAN Emulation. This is complementary to the ability of Analysis 7.8 to indicate in graphs when WAN Emulation was enabled and disabled. Id. at p. 101.

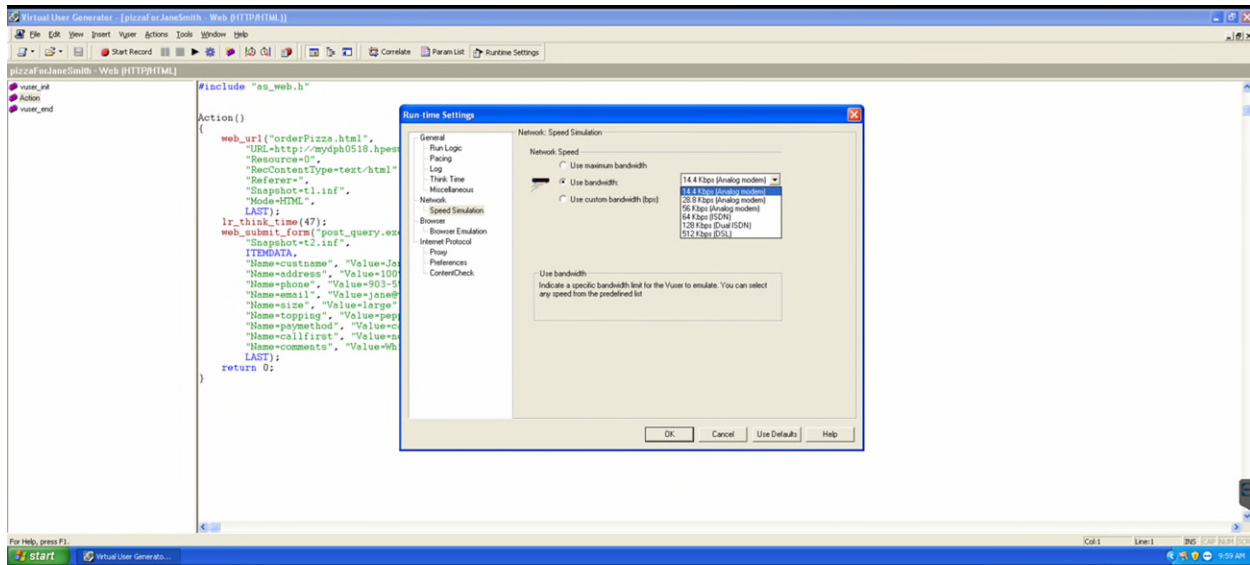
3. Run-time Settings

46. In addition to reviewing documentation, I have also operated LoadRunner 7.8. Through that, I have further confirmed that LoadRunner 7.8 also has the ability to enable virtualized network testing via “Run-time settings.” This can be seen below in the LoadRunner 7.8 Controller. Here before starting the load test, I have limited the bandwidth using a pre-determined profile for 512 kbps DSL. Custom settings of bandwidth can also be set as can be seen below.



LoadRunner Controller showing Run-time settings.

47. Run-time settings may also be set for a script in VuGen 7.8:



VuGen 7.8 showing pizza-ordering script in background with Run-time setting window open to Network > Speed Simulation.

V. PRIOR ART VERSIONS OF LOADRUNNER WERE CAPABLE OF TESTING “MOBILE APPLICATIONS,” UNDER DR. MALEK’S THEORIES.

48. In this section, I show that LoadRunner 7.8 also had the ability to test mobile applications under Dr. Malek’s infringement theories.

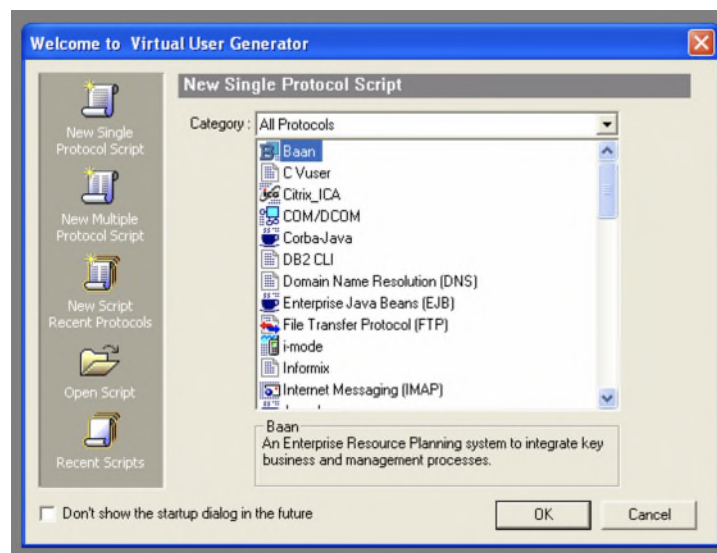
49. I do not agree with Dr. Malek’s infringement theories. The Asserted Patents are about testing of applications for mobile devices. Those applications are to be run on a mobile device, not a cloud server. This can be seen because the problem statement of the patents is overload of the resources of the mobile device. Dr. Malek does not differentiate between mobile applications that run on a mobile device versus “mobile applications” that are actually software that runs on a server in the cloud. A person of ordinary skill in the art would not view software that runs on a server in the cloud as an application for a mobile device of the claims. However, under Dr. Malek’s infringement theory, which is based on scripts that generate virtual users, LoadRunner 7.8 generates such virtual users that correspond to mobile devices and network traffic therefrom. Thus, under Dr. Malek’s infringement theory, Dr. Malek would necessarily

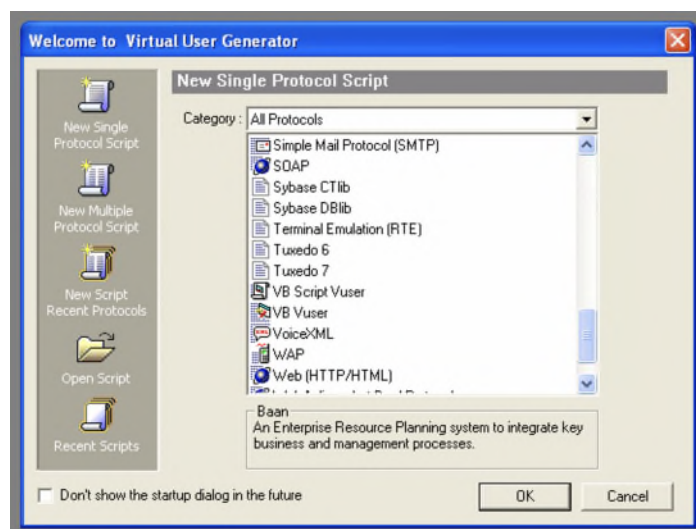
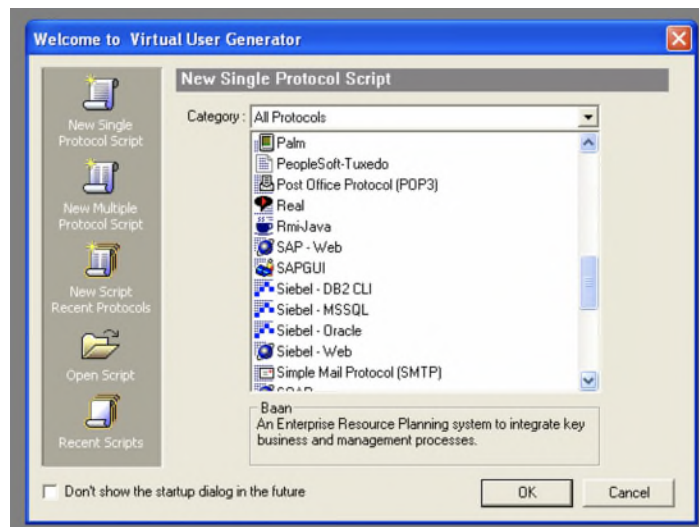
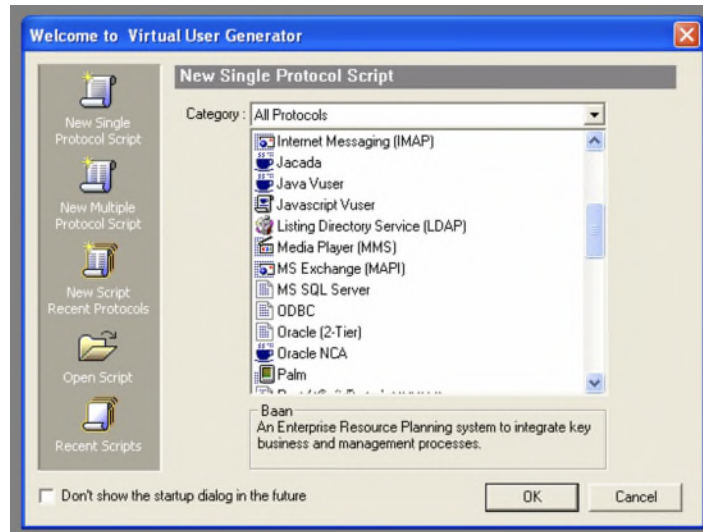
need to apportion out the value of non-patented technology in prior art versions of LoadRunner that include network virtualization and what Dr. Malek calls mobile device testing.

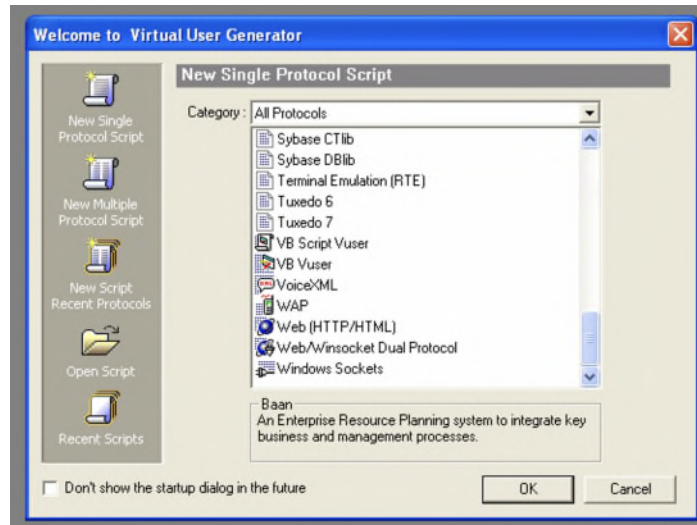
50. I also note that throughput and page load times are not resources of a mobile device, as Dr. Malek asserts. Nonetheless, under Dr. Malek's infringement theory, testing of mobile applications in a virtualized network environment with profile display windows showing throughput and page load times existed in prior art LoadRunner 7.8, and I document those facts below. Dr. Malek fails to apportion based on these facts.

51. There are numerous scripting protocols in LoadRunner 7.8 that allowed for the generation of virtual users (Vusers) that would have corresponded to mobile devices. Those include WAP, Web – HTTP/HTML, Real, Palm and E-mail protocols. In the sections below, I discuss each of these scripting protocols.

52. I have tested LoadRunner 7.8 myself including VuGen, Controller and Analysis. When VuGen 7.8 starts, the user has the option of selecting from numerous protocols. I selected "New Protocol Script," and the window changed to provide a list of available script protocols shown in the images below:







A. WAP

53. WAP is a protocol specifically designed for mobile devices. It acts like a web browser for mobile devices with limited resources.

https://en.wikipedia.org/wiki/Wireless_Application_Protocol;

<https://web.archive.org/web/20010602075145/http://wap.com/cgi-bin/wapfaq.cgi?chapter=0>.

WAP was a Vuser Type in LoadRunner Version 7.8. See MFDEFS00285233 in Exh. E hereto.

54. LoadRunner 7.8 included integration features with WAP development toolkits from phone manufacturers such as Nokia and Ericsson. Such toolkits included the Nokia WAP Toolkit 2.1 that was available for free and included a mobile device emulator for development of WAP applications. See <https://www.globenewswire.com/news-release/2001/02/06/1843994/0/en/Nokia-launches-WAP-Toolkit-2-1-with-new-mobile-phone-emulators-additional-functionality-for-developers-and-a-new-API-for-integration-with-third-party-development-environments.html>

B. Web – HTTP/HTML

55. Web – HTTP/HTML is a scripting protocol that corresponds to web browsers that make requests to websites. The primary web protocol is HTTP, and the type of page retrieved is

commonly coded in HTML. Web (HTTP,HTML) was a Vuser Type in LoadRunner Version 7.8. See MFDEFS00285233.

56. Further, as evidence that mobile devices in circa 2003 had a web browser, I use the Palm Treo 600 as an example. The Treo 600 was released in November 2003 and had a web browser. See https://en.wikipedia.org/wiki/Treo_600.

57. Windows Mobile 2003 also included a Pocket Version of Internet Explorer and was designed to run on smartphones. See https://en.wikipedia.org/wiki/Windows_Mobile_2003; see also https://en.wikipedia.org/wiki/Windows_Mobile; https://en.wikipedia.org/wiki/List_of_Windows_Mobile_devices#Windows_Mobile_2003 and https://en.wikipedia.org/wiki/Pocket_PC_2002.

C. Real

58. The Real protocol corresponds to Real Players. See <https://en.wikipedia.org/wiki/RealPlayer>. Real Player was available for mobile devices running Symbian and Palm OS. In 2003 Real Networks was demonstrating players for Windows CE and Pocket PC, and the Nokia 9210 smartphone already had a real player. See <https://www.zdnet.com/article/reálnetworks-streams-into-mobiles/>; see also <https://www.eetimes.com/qualcomm-upgrades-video-audio-capabilities-of-cdma-chipsets/>. Real Networks offered products for streaming media and audio services in circa 2003. RealPlayer was a Vuser Type in LoadRunner Version 7.8. See MFDEFS00285233. The RealPlayer scripting protocol in LoadRunner 7.8 allowed the generation of Vusers corresponding to Real streaming traffic such as audio and/or video that would be streamed to a mobile device.

D. Palm

59. Palm was also a Vuser Type in LoadRunner Version 7.8. See MFDEFS00285233.

Palm devices could communicate over the Internet to servers, and the VuGen Palm scripting protocol allowed those communications to be captured in a VuGen script:

Palm-based applications offer two ways to communicate with a remote server: cradle and wireless. Palm application docked on a cradle communicate directly with their servers over the Internet through the HotSync service. VuGen allows you to capture all traffic channeled through Palm's HotSync service. Since many applications use HTTP as a transport layer to communicate to their server, the script generated is web-like, and inherits the same syntax and functionality as Web. In rare occasions, the traffic is channeled over a proprietary protocol. This proprietary traffic will also be recorded and represented as WinSock functions in the script.

Id. at pp. 444-445 (emphasis added).

63. Palm was a manufacturer of mobile devices. See, e.g., <https://web.archive.org/web/20040406045152/http://www.palmone.com/us/products/smartphones/>. These mobile devices included mobile devices that were connected to cellular networks, such as the Palm Treo 600. Id.

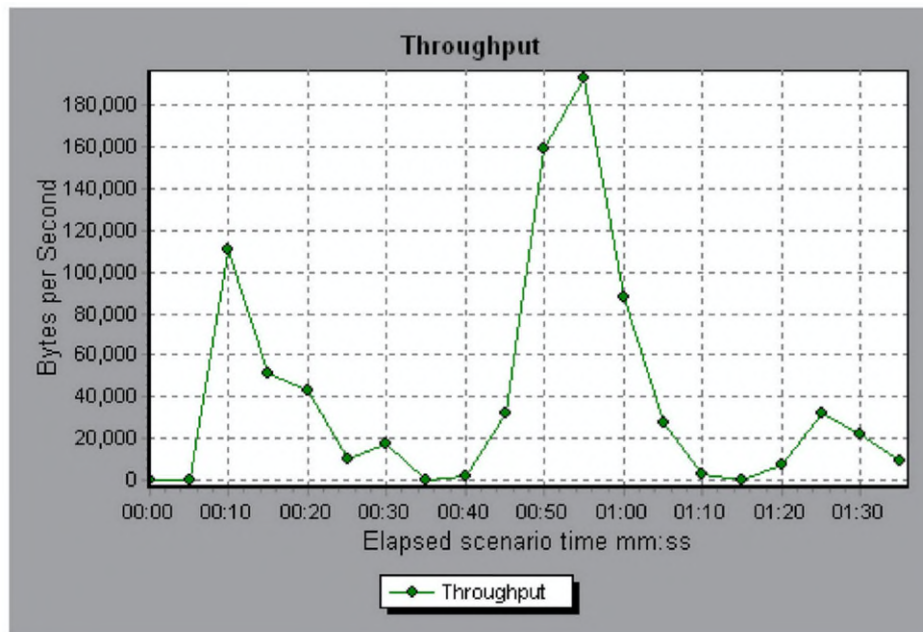
E. E-mail protocols (SMTP, POP and IMAP)

62. By 2003 smartphones also had e-mail capability. LoadRunner 7.8 contained a number of scripting protocols related to e-mail. This includes SMTP, POP and IMAP. See MFDEFS00285233. These mail service protocols facilitate both incoming and outgoing e-mail. In the 2003 time period numerous mobile devices supported e-mail including. See, e.g., <https://web.archive.org/web/20040402025022/http://www.palmone.com/us/products/smartphones/treo600/>, <https://gagadget.com/en/cellphones/21134-10-legendary-sony-ericsson-mobile-phones/>, <https://nokiamuseum.info/category/launching-year/2003/> and https://en.wikipedia.org/wiki/Windows_Mobile_2003.

VI. PRIOR ART LOADRUNNER CONTAINS GRAPHS FOR THROUGHPUT AND PAGE-LOAD TIMES

A. LoadRunner 7.6

60. LoadRunner 7.6 had the ability to display “Web Resource Graphs” after the run of a test scenario. One such graph is a “Throughput Summary Graph.” Id. at p. 77. The “Throughput Graph” shows the “amount of throughput on the server during each second of the scenario run.” Id. at p. 80. Thus, when scenarios are run with a single Vuser, this throughput graph represents the throughput to the user as measured at the server. Dr. Malek alleges that such a throughput meets the requirement of profile display windows to display resource availability of a mobile device. I have reproduced a graph from the LoadRunner Analysis User’s Guide (excerpted in Exh. B):



Id. at p. 80.

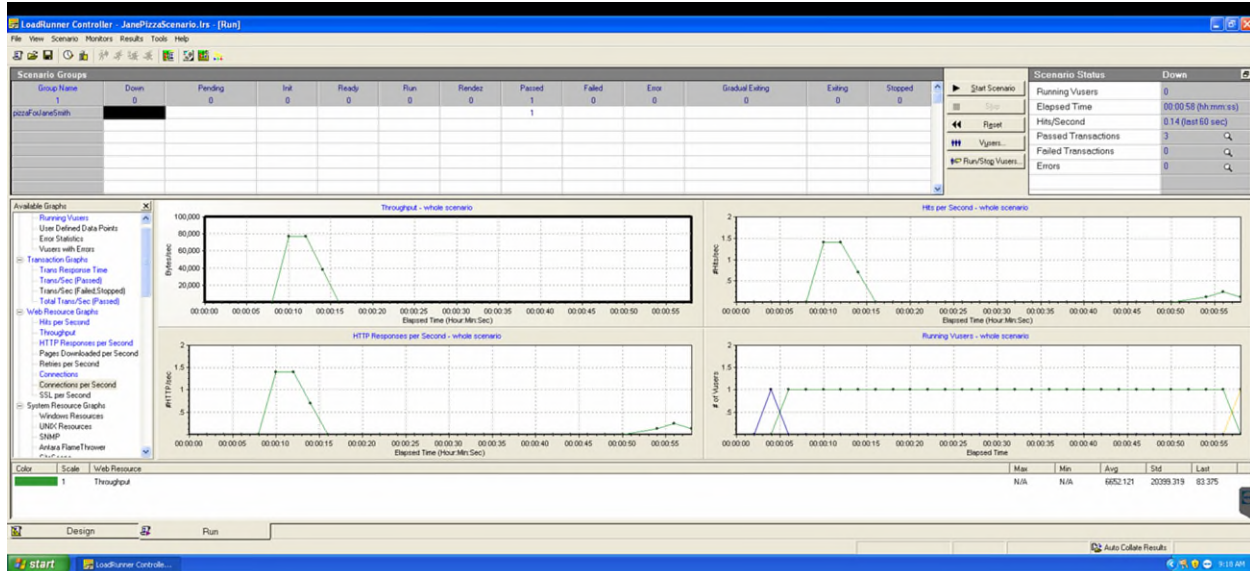
B. LoadRunner 7.8

61. I have personally tested LoadRunner 7.8 including the VuGen, Controller and Analysis programs. I note in Dr. Malek's apportionment analysis that there is no apportionment related to prior art graphs that were available in prior art versions of LoadRunner.

62. Dr. Malek accuses throughput and web page load times (DOM load times) as being resources of a mobile device. While I disagree with this infringement theory—e.g. how long a page takes to load from a web server would not be considered a resource of a mobile device—since these features existed in prior art versions of LoadRunner, Dr. Malek should have apportioned out and excluded their value as part of his apportionment analysis.

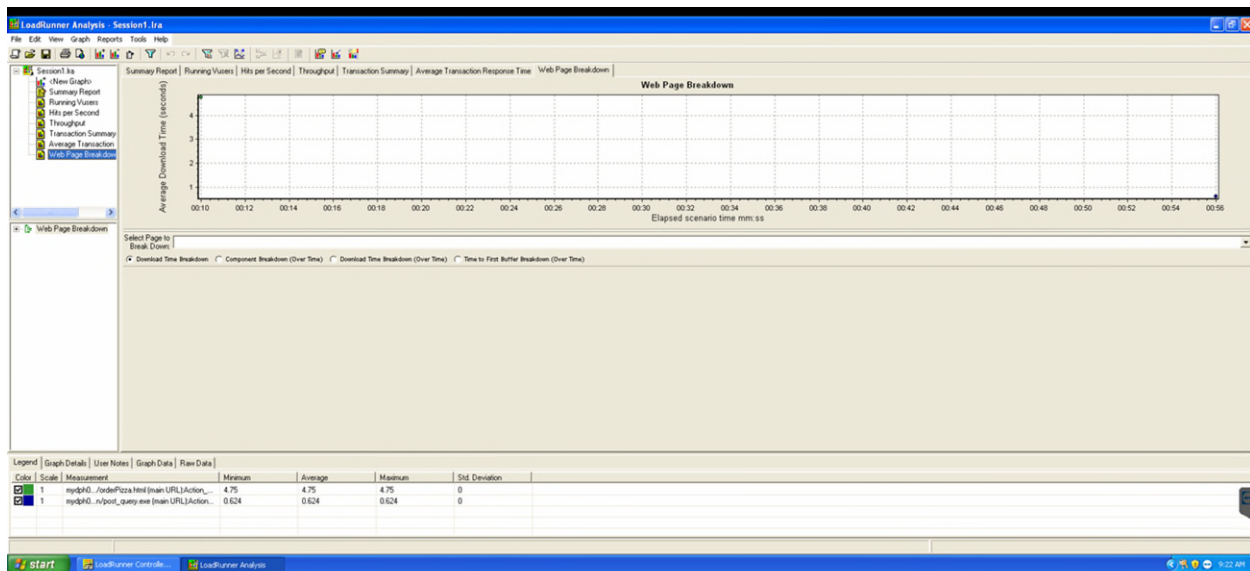
63. I recorded and ran a Web – HTTP/HTML script based on a faux pizza-ordering website. I then ran the script in LoadRunner's Controller 7.8. I selected a single Vuser. I configured the Controller to show the following graphs: (a) Throughput, (b) Hits per Second; (c) HTTP Responses per Second; and (d) Running Vusers. The image below shows the test after it ran. The test took approximately 50 seconds. The Controller window showing the throughput graph is shown below. There it can be seen that there is activity near the beginning of the test which corresponds to the pizza-ordering webpage loading, which included a number of images. Near the end of the 50-second run, the order is entered, and the server returns an order summary,

which is a much smaller amount of textual data.



LoadRunner Controller 7.8 running single pizza-ordering Vuser with WAN Emulation enabled using predefined profile for “Transatlantic Low Congestion link (Satellite).”

64. Further, I used the LoadRunner Analysis 7.8 program to display Web Page Breakdown graphs. I did this for the same pizza-ordering webpage that was used above. The graph below shows the initial load of the pizza-ordering webpage took 4.75 seconds. When the order was placed, it took 0.624 seconds for the order summary page to load.



LoadRunner 7.8 Analysis showing Web Page Breakdown graph for single-user, pizza-ordering test.

65. Dr. Malek additionally errs by not apportioning for the ability of prior art versions of LoadRunner to display throughput and page-load time graphs.

VII. COMMUNITY EDITION LICENSE

66. In his February 19, 2021 deposition, Dr. Malek stated that “the product that [he] examined ... comes with a community bundle -- a community license.” The LoadRunner Community license is a perpetual license given free of charge, with no purchase required, but limited to: “1 Controller allowing 1 concurrent run, 1 PC Lifecycle user, and 50 permanent Vusers.” <https://www.microfocus.com/en-us/products/loadrunner-enterprise/pricing>. Based on that, the differences between the free community license rights and the rights granted to purchasers of other LoadRunner licenses have to do with scale: more controllers, more concurrent runs, more Lifecycle users, and more Vusers.

67. *None* of those scaling distinctions between the free Community License and the licenses for which Micro Focus charges is pertinent to the Asserted Patents. But Dr. Malek does not apportion out any value for those scaling features—even though those features appear to be solely responsible for all of Micro Focus’s revenues from the accused products, because it is those unpatented scaling features, rather than the features that Dr. Malek accuses of infringement, that distinguish the free Community License that Dr. Malek considered from the licenses for which Micro Focus does charge. This is another grave defect in Dr. Malek’s supplemental apportionment analysis. Because the free Community License differs from the revenue-generating licenses only in unpatented ways, *all* of the revenues should be apportioned to the unpatented features.

VIII. ATTESTATION

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct to the best of my knowledge and that this declaration was executed on February 21, 2021 in Washington, D.C.

A handwritten signature in black ink, appearing to read "Matthew B. Shoemake", written over a horizontal line.

Matthew B. Shoemake